

Naval Environmental Prediction Research Facility
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FOREWORD

This directory lists research reports published by the Naval Environmental Prediction Research Facility during the years 1971-89. Abstracts of 1989 reports are provided.

The command was disestablished on 21 Nov 89 by OPNAV Notice 5450 of 21 Nov 89. It was merged at that time with the Naval Ocean Research and Development Activity and the Institute for Naval Oceanography to form the Naval Oceanographic and Atmospheric Research Laboratory (NOARL), a corporate naval ocean sciences laboratory under the Chief of Naval Research. The former NAVENVPREDRSCHFAC is now the NOARL Atmospheric Directorate.

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This eleventh edition of November 1989 incorporates and supersedes all previous listings/editions

Availability Codes	
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A-1

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TP 1-71	739-702	Dec 1971	Large-Scale 'Turnover' in the Oceans -- S. Larsen, D. Dale, T. Laevastu -- 36 pp
TP 1-72	739-364	Jan 1972	A Summary of the U.S. Navy Program and FY 1971 Progress in Weather Modification and Control -- Environmental Prediction Research Facility -- 72 pp
TP 2-72	738-847	Jan 1972	The Effects of Oceanic Fronts on Properties of the Atmospheric Boundary Layer -- T. Laevastu, K. Rabe, G. Hamilton -- 54 pp
TP 3-72*	745-759	Mar 1972	A Description of the EPRF Hydrodynamical/Numerical Model -- T. Laevastu, K. Rabe -- 58 pp
TP 3A-72	745-760	Mar 1972	Appendices to ENVPREDRSCHFAC Technical Paper No. 3-72 Entitled A Description of the EPRF Hydrodynamical-Numerical Model -- Environmental Prediction Research Facility -- 34 pp
TP 4-72	746-451	Jul 1972	Numerical Modeling of the Growth of Ice Crystals, Graupel, and Hail -- E. Hindman, D. Johnson -- 56 pp
TP 5-72	746-130	May 1972	Geographic and Monthly Variation of Rapid Intensification and Low-Latitude Weakening of Tropical Cyclones of the Western North Pacific Ocean -- S. Brand -- 36 pp
TP 6-72	746-131	May 1972	Changes in the Characteristics of Typhoons Crossing the Philippines -- S. Brand, J. Blelloch -- 38 pp
TP 7-72*	746-880	Jul 1972	Speed of Tropical Storms and Typhoons After Recurvature in the Western North Pacific Ocean -- L. Burroughs, S. Brand -- 43 pp

Listed publications are identified by the following letter prefixes:

AR -- Applications Report
 CPN -- Computer Programming Note
 CR -- (NEPRF) Contractor Report
 TM -- Technical Memorandum

TN -- Technical Note
 TP -- Technical Paper
 TR -- Technical Report

* Indicates Out of Print

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TP 8-72	751-579	Jun 1972	The Mean Winds of the Upper Troposphere Over the Central and Eastern Pacific -- J. Sadler -- 29 pp
TP 9-72*	522-652L	Sep 1972	The Validity of Forecasts of Ballistic Wind and Density for Fleet Ballistic Missile Systems, 1971-1972 Spring, Fall and Winter Case Studies: Eurasia and Eastern Test Range -- D. Schertz, P. Lowe -- 81 pp
TP 10-72	761-620	Sep 1972	A Numerical Study in Optimum Track Ship Routing Climatology -- F. Nagle -- 174 pp
TP 11-72*	524-343L	Dec 1972	The Effects of Subthermocline Ducts on the Propagation of Sound -- T. Laevastu, P. Wolff -- 50 pp
TP 12-72	907-418	Dec 1972	Monsoon Meteorology, by Colin S. Ramage; A Digest for Africa and Adjoining Indian Ocean Waters -- L. Brody -- 80 pp
TP 13-72*	757-328	Oct 1972	A Study of Numerical Simulation of Maritime Fog -- D. Feit -- 46 pp
TN 1*	---	Apr 1972	Computation of Flushing and Other Pollution Problems in Pearl Harbor with Hydrodynamical-Numerical (HN) Models -- Environmental Prediction Research Facility -- 21 pp
TN 2	776-231	Apr 1972	Coastal Sea-Air Interactions and the Extent of Coastal Influence -- Environmental Prediction Research Facility -- 26 pp
TN 3	776-226	Apr 1972	A Description of Linear and Nonlinear Computational Instability -- D. Haney -- 11 pp
TN 4	776-227	Jun 1972	Estimating Wind Speed Changes at Land/Sea Boundaries -- R. Cormier -- 10 pp
TN 5	776-228	Jun 1972	Visibility Calculations for Microphysical Computer Models -- D. Johnson -- 29 pp
TN 6	776-229	Jul 1972	A Bibliography of Selected Publications on Mediterranean Meteorology -- O. Haney -- 33 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
CPN 1	A-011-119	Jan 1972	NODCXBT Subroutine for CDC 1604 -- K. Rabe -- 6 pp
CPN 2	A-012-938	Jan 1972	NODCBCD Subroutine for CDC 1604 -- K. Rabe -- 5 pp
CPN 3	A-011-409	Jan 1972	Basic Zoom Program - Extraction of a Portion of Hemispheric Analyses and Interpolation to a New Grid of Desired Size, Location, and Orientation -- G. Wiese -- 32 pp
CPN 4	A-011-410	Sep 1972	STATPROG Subroutines for CDC 1604 -- C. Simpson -- 22 pp
TR B2-0272-001 (CSU) *	741-717	Feb 1972	Diagnostic Study of the Planetary Boundary over the Oceans -- W. Gray (Colorado State University) -- 99 pp
TR S1-0972-002 (SRI)	757-814	Sep 1972	Further Development of Objective Methods for Registering Landmarks and Determining Cloud Motions from Satellite Data -- D. Wolf, R. Endlich, D. Hall (Stanford Research Institute) -- 82 pp
TP 1-73	758-007	Jan 1973	The 1972 Typhoon Analog Program (TYFOON-72) J. Jarrell, R. Wagoner -- 44 pp
TP 2-73	764-859	Mar 1973	Tropical Cyclones of the North Indian Ocean -- J. Sadler, R. Gidley -- 62 pp
TP 3-73	766-797	Mar 1973	The Low-Level Structure of Weak Tropical Waves - A Preliminary Report -- R. Fett, R. Nagle, W. Mitchell -- 26 pp
TP 4-73	767-031	Jun 1973	The Typhoons of October 1970 in the South China Sea: Intensification, Decay and Ocean Interaction -- C. Ramage -- 49 pp
TP 5-73	767-030	Jun 1973	State of the Sea Around Tropical Cyclones in the Western North Pacific Ocean -- S. Brand, J. Blelloch, D. Schertz -- 32 pp
TP 6-73	767-934	Sep 1973	Oceanic Fog--A Numerical Study -- E. Barker -- 74 pp
TP 7-73*	771-379	Sep 1973	Handbook for Forecasters in the Bay of Bengal -- M. Cuming -- 170 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TP 8-73	769-538	Oct 1973	Changes in the Characteristics of Typhoons Crossing the Island of Taiwan -- S. Brand, J. Blelloch -- 21 pp
TP 9-73	776-232	Dec 1973	The Evaluation of Hong Kong Harbor as a Typhoon Haven -- D. Mautner, S. Brand -- 130 pp
TP 10-73	775-616	Dec 1973	Potential Cumulus Rainfall Modification -- Panama Canal Zone -- P. Lowe -- 18 pp
TN 7	772-085	Sep 1973	Computation of Tidal Currents in the Vicinity of S. Stefano Island -- K. Rabe -- 24 pp
TN 8	772-093	Nov 1973	Coastal Sea-Air Interactions and the Extent of Coastal Influence -- T. Laevastu -- 32 pp
TN 9	772-094	Nov 1973	A Model of Circulation and Dispersion in Pearl Harbor -- S. Larson -- 32 pp
CPN 5	A-011-411	Jan 1973	Mediterranean Sea-Surface Temperature Analysis Program - MEDSST -- A. Anderson, S. Larson, L. I'Anson -- 121 pp
CPN 6	A-011-412	Jan 1973	Program BTREPORT -- A. Anderson, S. Larson -- 80 pp
CPN 7	A-011-413	Feb 1973	Mediterranean Mixed Layer Depth Analysis Program - MEDMLD -- A. Anderson -- 62 pp
CPN 8	A-011-414	Feb 1973	The WAVE32 Program -- S. Larson, A. Anderson -- 59 pp
CPN 9	A-011-415	Feb 1973	The MLDZOOM Program -- S. Larson, A. Anderson -- 34 pp
CPN 10	A-035-170	Jul 1973	Ocean Climatology Extraction and Adjustment Program for the Mediterranean Program SOVEL -- T. Laevastu -- 22 pp
CPN 11	A-011-416	Nov 1973	Program GRAPHIC -- C. Simpson, D. Johnson -- 36 pp
CPN 12	A-011-417	Dec 1973	Subroutine SKEWTLP -- J. Ficke -- 12 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TR S1-0673-003 (ESC) *	767-026	May 1973	Satellite Observations of Anomalous Local Wind Events in the Mediterranean Region -- J. Meneely, E. Merritt (Earth Satellite Corporation) -- 138 pp
TRS1-0873-004 (ESC)	770-208	Aug 1973	The NIMBUS 5 ESMR and its Application Storm Detection -- R. Sabatini, E. Merritt (Earth Satellite Corporation) -- 51 pp
TR 1-73 (ODSI)	770-207	Sep 1973	Extending the Computerized Typhoon/Tropical Storm Prediction Program (Typhoon 72) Toward Seven Days -- (Ocean Data Systems, Inc.) -- 115 pp
TR 2-73 (CSC)	773-964	Nov 1973	Organizational Structures for Constant Resolution Earth Data Bases -- P. Beaudet, F. Chan, L. Goldshlak (Computer Sciences Corporation) -- 190 pp
TR 3-73 (ARA)	774-524	Sep 1973	Development of Digital Enhancement Techniques Applicable to Direct Readout (APT) Meteorological Satellite Images -- I. Tamches, N. Kelknap (Applied Research Associates, Inc.) -- 123 pp
TP 1-74	774-683	Jan 1974	Tropical Cyclone Movement Forecasts Based on Observations from Satellites -- R. Fett, S. Brand -- 70 pp
TP 2-74	777-429	Mar 1974	Using Helicopters to Clear Fog: A Numerical Study -- D. Johnson, E. Barker, P. Lowe -- 38 pp
TP 3-74	777-958	Feb 1974	A Numerical Simulation of Warm Fog Dissipation by Electrically Enhanced Coalescence -- P. Tag -- 51 pp
TP 4-74	778-316	Mar 1974	The Computation of Saturation Vapor Pressure -- P. Lowe, J. Ficke -- 27 pp
TP 5-74*	777-406	Mar 1974	A Three-Parameter Model for Limited Area Forecasting -- L. Bengtsson -- 112 pp
TP 6-74	A-000-267	Apr 1974	An Evaluation of the Harbors of Kaohsiung and Chilung (Keelung), Taiwan as Typhoon Havens -- M. Brown -- 108 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TP 7-74	781-259	May 1974	A Numerical Study of Clearing Warm Fog by Using Hygroscopic Seeding in Conjunction with Helicopter Downwash -- P. Tag -- 40 pp
TP 8-74	781-324	May 1974	Cost Effectiveness of Typhoon Forecasts Improvements -- S. Brand, J. Blelloch -- 31 pp
TP 9-74	782-364	May 1974	A Role of the Tropical Upper Tropospheric Trough in Early Season Typhoon Development -- J. Sadler (University of Hawaii) -- 54 pp
TP 10-74	785-245	Jul 1974	Computation of Real-Time Currents off Southern California with Multi-Layer Hydrodynamical-Numerical Models -- T. Laevastu, G. Hamilton -- 72 pp
TP 11-74	786-347	Aug 1974	A Tropical Cyclone Analog Program for the North Indian Ocean -- S. Brand, J. Long, J. Blelloch, G. Hamilton -- 20 pp
TP 12-74	A-000-088	Aug 1974	Monsoonal Influences on the Annual Variation of Tropical Cyclone Development -- C. Ramage (University of Hawaii) -- 34 pp
TP 13-74	786-699	Aug 1974	The Effect of Utilizing Empirically Derived Values of Coalescence Efficiency in a Microphysical Cloud Model -- P. Tag -- 38 pp
TP 14-74	787-481	Sep 1974	Mesoscale Feedback from the Ocean to the Atmosphere in Coastal and Oceanic Frontal Regions -- T. Laevastu, G. Hamilton -- 46 pp
TP 15-74	A-004-620	Oct 1974	Description of the Optimized EPRE Multi-Layer Hydrodynamical-Numerical Model -- R. Bauer -- 66 pp
TP 16-74	A-001-271	Oct 1974	A Tropical Cyclone Analog Program for the Southwest Indian Ocean -- S. Brand, J. Blelloch, J. Long -- 20 pp
TN 10	778-609	Jan 1974	A Vertically Integrated Hydrodynamical/Numerical Model (W. Hansen Type): Model Description and Operating/Running Instruction -- Environmental Prediction Research Facility -- 69 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TN 11	778-619	Jan 1974	A Multilayer Hydrodynamical-Numerical Model (W. Hansen): Model Description and Operating/Running Instructions -- T. Laevastu -- 60 pp
TN 12	778-610	Jan 1974	Computation of Tides, Currents and Dispersal of Pollutants in Lower Bay and Approaches to New York with Fine and Medium Grid Size Hydrodynamical-Numerical Models -- T. Laevastu, M. Clancy, A. Stroud -- 57 pp
TN 13	778-617	Jan 1974	Computation of Tides, Currents and Dispersal of Pollutants in the New York Bight from Block Island to Atlantic City with Large Grid Size, Single and Two-Layer Hydrodynamical-Numerical Models -- T. Laevastu, R. Callaway A. Stroud, M Clancy -- 84 pp
TN 14	777-048	Mar 1974	Summaries and Abstracts of Tropical Publications of the Navy Weather Research Facility and Environmental Prediction Research Facility, 1968 to Feb 1974 -- Environmental Prediction Research Facility -- 20 pp
TN 15	778-618	Mar 1974	Typhoon and Tropical Storm Intensity Forecasts for 24, 48 and 72 Hour Using Statistical Regression Equations -- R. Elsberry, G. Coltrane, P. Krueger -- 26 pp
TN 16	779-005	Apr 1974	A Fine Mesh Sea-Level Pressure Analysis Scheme Incorporating Effects of Elevation and Terrain -- L. Brody -- 31 pp
CPN 13	A-035-169	Mar 1974	Users Guide to UPDATE -- J. Long -- 16 pp
CPN 14	787-480	Sep 1974	Users Guide for Direct Readout Data Converter (DRDC) -- G. Hunolt -- 127 pp
CPN 15	A-005-310	Sep 1974	Program COATEM -- B. van der Bijl (Compass Systems, Inc.) -- 17 pp
CPN 16	A-005-311	Sep 1974	Program TRUWIND -- B. van der Bijl (Compass Systems, Inc.) -- 7 pp
CPN 17	A-005-312	Sep 1974	Program ROGMAP -- R. Bauer, B. van der Bijl (Compass Systems, Inc.) -- 20 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
CPN 18	A-005-321	Sep 1974	A Ray Trace Program Package for the CDC 1604 Computer -- B. van der Bijl (Compass Systems, Inc.) -- 36 pp
CPN 19	A-005-322	Oct 1974	Program PLOTS (HN Model Pen Plots) -- R. Bauer, B. van der Bijl (Compass Systems, Inc.) -- 50 pp
TR 1-74 (ERT) *	A-001-300	Jan 1974	Oceanographic Studies Using Satellite Data: Detection of Near-Shore Phenomena in ERTS Imagery -- C. Bowley, J. Barnes (Environmental Research & Technology, Inc.) -- 121 pp
TR 2-74 (SRI)	779-331	Nov 1973	Objective Methods for Determining Cloud Motions from Satellite Data -- D. Hall, F. Tomlin, D. Wolf (Stanford Research Institute) -- 45 pp
TR 3-74 (ODSI) *	780-423	Apr 1974	Survey of Pacific Theatre Satellite Data Users -- W. Hubert (Ocean Data Systems, Inc.) -- 100 pp
TR 4-74 (CDC) *	780-772	Mar 1974	Objective Methods for Locating the Center of Tropical Storms -- D. Dartt, M. Ulstad, R. Weinberg (Control Data Corporation) -- 16 pp
TR 5-74	783-547	May 1974	The Application of the NIMBUS 5 ESMR to Sea Surface Wind Determination -- R. Sabatini (Earth Satellite Corporation) -- 80 pp
TR 6-74 (ERT) *	A-001-092	Jun 1974	Mapping of Sea Surface Temperature by the NOAA-2 Satellite -- J. Cogan, J. Willand (Environmental Research & Technology, Inc.) -- 72 pp
TR 7-74 (ODSI)	787-021	Jul 1974	Survey of Atlantic Theatre Satellite Data Users -- W. Hubert (Ocean Data Systems, Inc.) -- 112 pp
TP 1-75	A-008-346	Jan 1975	Preliminary Investigation of the Monthly and Seasonal Variation of Total Mass of the Atmosphere of the Northern Hemisphere and its Possible Use as a Partial Measure of Water Vapor Content Change of the Atmosphere -- W. Rudloff, T. Laevastu, J. Harding, S. Larson, G. Britton -- 17 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TP 2-75	A-006-255	Jan 1975	An Investigation of Interactions Between Double Clouds Using a Two-Dimensional Numerical Model -- W. Sweet, P. Lowe -- 110 pp
TP 3-75	A-007-301	Feb 1975	Summary Report of Hydrodynamical-Numerical (HN) Model Workshop and AGU Topical Meeting: Hydrodynamical-Numerical Models for Coastal and Open Ocean Areas -- T. Laevastu -- 93 pp
TP 4-75	A-008-158	Mar 1975	A Maritime Boundary Layer Model for the Prediction of Fog -- E. Barker -- 51 pp
TP 5-75	A-024-271	Nov 1975	Handbook for Forecasters in the Mediterranean; Weather Phenomena of the Mediterranean Basin; Part 1: General Description of the Meteorological Processes -- E. Reiter -- 344 pp
TP 6-75	A-009-530	Mar 1975	The Navy's Analog Scheme for Forecasting Tropical Cyclone Motion over the Northeastern Pacific Ocean -- J. Jarrell , C. Mauck, R. Renard -- 27 pp
TP 7-75	A-010-792	Mar 1975	Monthly Mean Evaporation and Surface Winds over the Northern Hemisphere Oceans and Their Year-To-Year Variations -- S. Larson, T. Laevastu -- 50 pp
TP 8-75	A-010-122	Mar 1975	A 26-Year Time Series of Monthly Mean Winds Over the Oceans: Part 1 - A Statistical Verification of Computed Surface Winds Over the North Pacific and North Atlantic -- S. Larson -- 89 pp
TP 9-75	A-011-817	May 1975	A Statistical and Spectral Analysis of the Air-Sea Interactions at OWS NOVEMBER -- K. Rabe, R. Bourke -- 89 pp
TP 10-75	A-010-123	Apr 1975	A 26 Year Time Series of Monthly Mean Winds Over the Ocean: Part II - Monthly Anomalies at Selected Points in the North Pacific -- S. Larson -- 104 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TP 11-75	---	---	Unpublished
TP 12-75	A-012-369	Apr 1975	Further Development of a 3-7 Day Typhoon Analog Forecast Model for the Western Pacific -- W. Yogi, J. Long, J. Steuckert (Ocean Data Systems, Inc.) -- 37 pp
TP 13-75	A-010-121	May 1975	An Evaluation of the Harbors of Subic Bay and Manila, Republic of the Philippines, as Typhoon Havens -- J. Douglass -- 115 pp
TP 14-75	A-011-818	May 1975	Classification and Analysis/Forecasting of Near-Surface Ocean Thermal Structure -- T. Laevastu -- 34 pp
TP 15-75	A-012-348	Jun 1975	An Evaluation of the Harbor of Yokosuka, Japan as a Typhoon Haven -- R. Graff -- 100 pp
TP 16-75	A-011-057	Mar 1975	Tropical Cyclone Genesis in the Western North Pacific -- W. Gray (Colorado State Univ.) -- 66 pp
TP 17-75	A-014-100	Jul 1975	An Evaluation of Sasebo Harbor, Japan as a Typhoon Haven -- D. Rudolph -- 115 pp
TP 18-75	A-020-304	Oct 1975	Island Barrier Effects on Sea State and Atmospheric Moisture as Detected by a Numerical Wave Model and Sensors of the Defense Meteorological Satellite Program (DMSF) -- R. Fett, K. Rabe -- 67 pp
TP 19-75	A-018-847	Nov 1975	An Evaluation of Apra Harbor, Guam as a Typhoon Haven -- M. Brown, S. Brand -- 79 pp
TP 20-75	A-021-213	Nov 1975	Objective Analysis Technique in Sigma Coordinates -- D. Schiessl -- 152 pp
TP 21-75	A-025-087	Dec 1975	An Evaluation of the Harbors of Buckner Bay and Naha, Okinawa as Typhoon Havens -- D. Rudolph, F. Blake, S. Brand, J. Blelloch -- 90 pp
TP 22-75	A-019-307	Dec 1975	An Evaluation of the Harbors of Inchon, Pusan and Chinhae, Republic of Korea, as Typhoon Havens -- D. Rudolph -- 130 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TP 23-75	A-019-312	Dec 1975	An Evaluation of the Harbors of Kwakuni and Kure, Japan as Typhoon Havens -- J. Manning -- 82 pp
TP 24-75	A-020-640	Dec 1975	An Evaluation of the Numazu Operating Area and Kagoshima Harbor, Japan as Typhoon Haven -- R. Wixom -- 125 pp
TN 17	A-008-156	Feb 1975	Surface Currents Deduced from Ship Drift at the Periphery of Costa Rica Dome -- T. Laevastu -- 7 pp
TN 18	A-010-234	Mar 1975	An Evaluation of Available Wave Refraction Models for Use on the CDC 3100 Computer -- K. Rabe -- 30 pp
TN 19	A-010-546	Apr 1975	Puerto Rico Operating Area Search and Rescue Program - USAR -- K. Rabe -- 60 pp
TN 20*	A-010-791	Apr 1975	Direct Solution of Elliptic Equations by Block Cyclic Reduction and Factorialization -- T. Rosmond, F. Faulkner -- 34 pp
TN 21	A-013-192	Jun 1975	NVA Upper Air Temperature and Wind Analysis for a 12-Level European Area Model -- A. Groll -- 53 pp
TN 22*	A-014-083	Aug 1975	Interrelationships between Tropical North Pacific Atmospheric Circulation, Explosive Volcanism, Sea Surface Temperature and Western North Pacific Tropical Storms and Typhoons -- J. Harding, S. Larson -- 25 pp
TN 23	---	---	Unpublished
CPN 20	A-020-045	May 1975	A Cloud Advection Model -- R. Nagle -- 113 pp
CPN 21	A-008-841	Mar 1975	The Delaware-Dobson Wave Refraction Model -- K. Rabe -- 47 pp
CPN 22	A-013-191	Mar 1975	Subroutines for Direct Solution of Three-Dimensional Elliptic Equations -- T. Rosmond -- 39 pp
CPN 23*	A-013-190	Apr 1975	Subroutines for the Direct Solution of Two-Dimensional Elliptic Equations -- T. Rosmond -- 32 pp

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TR 1-75	---	---	Unpublished
TR 2-75 (CSC)	A-010-232	Apr 1975	Feasibility Study of a Quadrilateralized Spherical Cube Earth Data Base -- F. Chan, E. O'Neill (Computer Sciences Corporation) -- 114 pp
TR 3-75 (ESC)	A-010-541	Feb 1975	Sea Surface Wind Speed Estimates from the NIMBUS 5 ESMR -- R. Sabatini (Earth Satellite Corporation) -- 55 pp
TR 4-75*	---	Feb 1975	Techniques for Processing VTPR Side-Scan Radiances Including Diagnosis for the Clear-Column Radiance Components -- M. Holl (Meteorology International Incorporated) -- 93 pp plus Appendix A
TR 5-75* (UD)	A-014-320	May 1975	Interpretation of Structures Over Oceanic Regions in DMSP Data -- K. Szekiolda (University of Delaware) -- 41 pp
TR 6-75 (ESC)	A-009-850	Apr 1975	Applications of the NIMBUS 5 ESMR to Rainfall Detection Over the Oceans and to Sea-Ice Detection -- R. Sabatini, D. Hlavka, R. Arcese (Earth Satellite Corporation) -- 77 pp
TR 7-75*	A-014-427	May 1975	Mapping of Sea Surface Temperature by the DMSP Satellite -- J. Cogan, J. Willand (Environmental Research & Technology, Inc.) -- 82 pp
TR 8-75 (SRI)	A-021-173	Oct 1975	Correlation of Cloud Brightness and Radiance with Precipitation Intensity -- R. Blackmer (Stanford Research Institute) -- 134 pp
TR 9-75 (SRI)	A-021-772	Oct 1975	Implementation of the SRI Objective Cloud Tracking System at EPRF -- D. Hall, D. Wolf (Stanford Research Institute) -- 62 pp
TR 10-75 (SRI)	A-020-689	Oct 1975	Use of Infrared Radiance Measurements in Dynamic Analysis -- P. Davis (Stanford Research Institute) -- 76 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TR 11-75*	A-022-650	Oct 1975	Objective Tropical Storm Parameters from Satellite Cloud Patterns -- D. Dartt (Control Data Corporation) -- 23 pp + Figures
TR 12-75 (MII)	A-023-908	Dec 1975	Tests and Evaluations of CLRX, the Diagnosis of Clear Column Radiances -- M. Holl (Meteorology International Incorporated) -- 109 pp
TR 13-75* (ODSI)	A-024-736	Nov 1975	Data Assimilation Restorative-Iterative Model (RIMOD) -- P. Kesel, R. Welck (Ocean Data Systems, Inc.) -- 154 pp
TP 1-76	A-023-676	Mar 1976	A Tropical Cyclone Analog Program for the Southwest Pacific Ocean and Australian Region -- S. Brand, J. Blelloch -- 23 pp
TP 2-76	A-025-456	Feb 1976	Tropical Cyclone Initiation by the Tropical Upper Tropospheric Trough -- J. Sadler (University of Hawaii) -- 104 pp
TP 3-76	A-027-533	May 1976	An Evaluation of the Harbor of Cebu, Republic of the Philippines, as a Typhoon Haven -- B. Hassell -- 74 pp
TP 4-76	A-027-532	May 1976	Cross-Equatorial Interactions in the Development of a Winter Typhoon: Nancy 1970 -- C. Guard (University of Hawaii) -- 46 pp
TP 5-76	A-034-188	Jun 1976	Typhoon Havens Handbook for the Western Pacific and Indian Oceans -- S. Brand, J. Blelloch -- 256 pp
TP 6-76	A-027-410	May 1976	Clearing Fog by Seeding with Charged Water Drops: A Numerical Study -- P. Tag -- 49 pp
TP 7-76	A-031-174	Jul 1976	The Climatology and Forecasting of Eastern North Pacific Ocean Tropical Cyclones -- R. Renard, W. Bowman -- 79 pp
TP 8-76	A-029-717	Aug 1976	A Wind Wave Tropical Cyclone Model for the Western North Pacific Ocean -- S. Brand, K. Rabe, T. Laevastu -- 21 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TN 24	A-021-638	Feb 1976	A Generalized Version of the Fields by Information Blending (FIB) Technique -- B. Maxwell -- 86 pp
CPN 24	A-037-226	Jan 1976	Calibration, Earth Location and Mapping Programs for the NIMBUS-5 Electronically Scanning Microwave Radiometer (ESMR) -- R. Nagle -- 134 pp
TR 1-76 (SRI)	---	Dec 1975	Analysis of Radio-Radar Propagation Conditions Using Satellite-Viewed Cloud Cover and Rawinsonde Observations -- R. Blackmer (Stanford Research Institute) -- 62 pp
TR 2-76* (CDC)	A-027-412	Jan 1976	A Pilot Analysis of the Curvature of Extratropical Storms -- D. Dartt (Control Data Corporation) -- 21 pp + Figures
TR 3-76 (CSC)	A-026-294	May 1976	Extended Studies of a Quadrilateralized Spherical Cube Earth Data Base -- E. O'Neill, R. Laubscher (Computer Sciences Corporation) -- 114 pp
TR 4-76 (MII)	A-034-291	Jan 1976	Development of the Capability for Surface-Wind Analysis on a Portable Grid (FIB/UV-PORT) -- B. Mendenhall (Meteorology International Incorporated) -- 40 pp + Appendices A and B
TR 5-76*	---	Mar 1976	Program Development for Reduction of Meteorological Satellite Data to Vertical Temperature and Humidity Profiles -- (Ocean Data Systems, Inc.) -- I, 197 pp; II, 332 pp
TR 6-76 (ESC)	A-046-629	Sep 1976	A Preliminary Study of the Applicability of NIMBUS 6 ESMR to Sea-Surface Wind Speed Estimates -- R. Sabatini, L. Heitkemper, D. Hlavka (Earth Satellite Corporation) -- 45 pp
TR 7-76* (ERT)	---	Nov 1976	An Algorithm to Retrieve Water Vapor Information from Satellite Measurements -- R. Crane (Environmental Research & Technology, Inc.) -- 37 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
AR 77-01	A-046-542	Mar 1977	Meteorological Phenomena of the Arabian Sea -- L. Brody -- 196 pp
AR 77-02	A-046-589	May 1977	The Regeneration of South China Sea Tropical Cyclones in the Bay of Bengal -- J. Sadler, B. Kilonsky (University of Hawaii) -- 24 pp
AR 77-03	B-024-969	Jan 1977	Navy Tactical Applications Guide. Volume 1 Techniques and Applications of Image Analysis -- P. Fett, W. Mitchell -- 110 pp
TR 77-01*	A-048-168	Jul 1977	Tropical Cyclone Research by Data Compositing -- W. Gray, W. Frank (Colorado State University) -- 70 pp
TR 2-77*	---	Apr 1977	Development of a Synoptic Climatology of Tropospheric Refractive Conditions for the Eastern Pacific Ocean Off the West Coast of the United States Task One and Task Two -- P. Kalinyak (Meteorology International Incorporated) -- 174 pp
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TR 88-01	A192058	Jan 1988	The Effects of Better Environmental Inputs in Estimating Sea Clutter -- T. Cheung -- 27 pp
TR 88-02	A192699	Feb 1988	An Evaluation of Two Millimeter Wave Propagation Models for Horizontal Atmospheric Attenuation at 70-115 GHz -- G. Vogel -- 82 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TR 88-03	B121875	Apr 1988	Comparison of Electro-Optical Ranges as Calculated from Model-Derived and Observed Data -- C. Sampson -- 37 pp. (Distribution authorized to U.S. Government agencies and their contractors only; critical technology; 28 Mar 1988. Other requests for this document shall be referred to Commanding Officer, Naval Environmental Prediction Research Facility, Monterey, CA 93943-5006.)
TR 88-04	--	Apr 1988	Parameterization of Horizontal Wind Velocity Variability -- LT T. Dowding, USN -- 128 pp
TR 88-05	--	Aug 1988	Meteorological Measurements During the Western Mediterranean Circulation Experiment - June 1986 -- J. Haggerty, R. Picard, R. Fett -- 236 pp
TR 88-06	--	Aug 1988	Severe Weather Guide, Mediterranean Ports: 22. Venice -- 57 pp
TR 88-07	--		23. Trieste -- 54 pp
TR 88-08	--		24. Cartagena -- 60 pp
TR 88-09	--		25. Valencia -- 60 pp
TR 88-10	--	Nov 1988	Climatology of North Pacific Tropical Cyclone Tracks -- R. Miller, T. Tsui, A. Schrader -- 514 pp
TR 88-11	--	Nov 1988	Icing Considerations for HALE (High Altitude, Long Endurance) Aircraft -- G. Vogel -- 55 pp
CR 88-01	A195632	Mar 1988	Passive Microwave Measurements of Water Vapor Fields and Rain for Locating Fronts in Cyclonic Storms -- K. Katsaros, I. Bhatti, L. McMurdie, G. Petty -- 50 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
CR 88-02	A197802	Mar 88	Forecasting Aids for Setting Tropical Cyclone Conditions: Sasebo and Iwakuni, Japan -- J. Jarrell -- 46 pp
CR 88-03	A197945	Apr 1988	Aerosol Characteristics in the Marine Boundary Layer over the Straits of Gibraltar - June 1986 -- B. Wattle, C. Rogers -- 88 pp
CR 88-04	A198911	May 1988	Severe Weather Guide, Mediterranean Ports: 16. Barcelona -- 74 pp
CR 88-05	A198912		17. Palma, Mallorca -- 63 pp
CR 88-06	A198913		18. Ibiza -- 71 pp
CR 88-07	A198914		19. Pollensa Bay -- 72 pp
CR 88-08	A198915		20. Livorno -- 73 pp
CR 88-09	A198909		21. La Spezia -- 61 pp
CR 88-10	--	Jun 1988	NOAA AVHRR Observations During the Marginal Ice Zone Experiment, Between Spitzbergen and Greenland, June 7 to July 18, 1984 -- O. Skagseth, K. Kloster, K. Barthel, O. Johannessen -- 137 pp
CR 88-11	--	Jun 1988	Forecasters Handbook for Japan and Adjacent Sea Areas -- R. Englebretson, R. Gilmore -- 659 pp. (Distribution authorized to U.S. Government agencies and their contractors only; administrative or operational use; 16 June 1988. Other requests for this document shall be referred to Commander, Naval Oceanography Command.
CR 88-12	--	Aug 1988	Program Performance Specification for North Atlantic Fog Forecasting -- C. Rogers -- 29 pp

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TR 89-01	A205542	Jan 1989	The NEPRF Sunglint Pattern Calculation and Display System -- J. Clark, A. Caughey -- 63 pp.
TR 89-02		Jan 1989	Proceedings: Conference on Microwave Propagation in the Marine Boundary Layer -- L. Hembree, G. Love, eds. -- 357 pp. (Distribution authorized to U.S. Government agencies and their contractors only; administrative or operational use; 21 Sep 88. Other requests for this document shall be referred to [Director, NOARL Atmospheric Directorate].)
TR 89-03	A207208	Mar 1989	On the Correction of Shipboard Miniradiosondes of the Western Mediterranean Circularion Experiment - June 1986 -- G. Vogel -- 26 pp.
TR 89-04	A210229	Apr 1989	Tests of Various Finite Difference Algorithms Applied to a Simple Water Vapor Transport Problem on a Staggered Grid -- H-C Kuo -- 28 pp.
TR 89-05	A207548	Apr 1989	The International TOVS Processing Package: An Evaluation -- C. Sampson -- 24 pp.
TR 89-06		Aug 1989	Field Data Driven Electro-Optical Tactical Decision Aids: A Feasibility Study -- J. Sierchio -- 45 pp. (Distribution authorized to U.S. Government agencies and their contractors only; critical technology; 30 June 1989. Other requests for this document shall be referred to [Director, NOARL Atmospheric Directorate].)
TR 89-07		Sep 1989	Navy Tactical Applications Guide (NTAG), Vol. 8, Part 1, Arctic; Greenland/Norwegian/Barents Seas; Weather Analysis and Forecast Applications -- Forecast Guidance Branch.
TR 89-08		Sep 1989	Forecasters Handbook for Central America and Adjacent Waters -- F. Williams, G. Jung, R. Renard -- 508 pp.

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
TR 89-09		Sep 1989	Analysis Uncertainties Determination: Navy Operational Global Atmospheric Prediction System (NOGAPS) -- J. Goerss -- 34 pp. (Distribution authorized to U.S. Government agencies and their contractors only; critical technology; 7 July 1989. Other requests for this document shall be referred to Commander, Naval Surface Warfare Center, Attn Code K44, Dahlgren, VA 22448-5000.
CR 89-01		Jan 1989	System Architecture Study for Environmental Support to Satellite Laser Communications -- H. Nicholson -- 67 pp. (Distribution authorized to the Department of Defense and DoD contractors only; critical technology; 30 Dec 88. Other requests for this document shall be referred to [Director, NOARL Atmospheric Directorate.]
CR 89-02	A207675	Mar 1989	Application of Special Sensor Microwave/Imager Data for Analysis of Cyclonic Storms in Midlatitudes Over the Sea -- K. Katsaros et al. -- 40 pp.
CR 89-03	A207829	May 1989	Satellite-Derived Moisture-Bogusing Profiles for the North Atlantic Ocean -- L. Eddington -- 34 pp.
CR 89-04	A210580	May 1989	Gridded Environmental Data Compaction: An Investigation -- H. Hamilton -- 151 pp.
		Jun 89	Severe Weather Guide, Mediterranean Ports:
CR 89-05	A211197		26. San Remo -- 54 pp
CR 89-06	A211211		27. Genoa -- 60 pp
CR 89-07	A211212		28. Porto Torres -- 62 pp
CR 89-08	A211080		29. Palermo -- 48 pp
CR 89-09	A211047		30. Messina -- 52 pp
CR 89-10	A210960		31. Taormina -- 56 pp
CR 89-11	A211780	Jul 1989	Investigation of North Atlantic Fog and Development of a Marine Fog Forecast System -- C. Rogers -- 62 pp.

Report Number	AD Number	Report Date	Title -- Author(s) -- Pages
CR 89-12		Sep 1989	Mark III Infrared Operational Tactical Decision Aids for Navy Operations: A Sensitivity Analysis R. Shapiro -- 159 pp. (Distribution authorized to U.S. Government agencies and their contractors only; critical technology; 1 Aug 89. Other requests for this document shall be referred to [Director, NOARL Atmospheric Directorate].)
CR 89-13		Oct 89	HALE Aircraft as Sources of Environmental Data Supporting Battle Group Operations: A Feasibility Study -- D. Ross -- 50 pp. (Distribution authorized to U.S. Government agencies and their contractors only; critical technology; 27 Sep 89. Other requests for this document shall be referred to [Director, NOARL Atmospheric Directorate].)

ABSTRACTS OF JAN-OCT 1989 PUBLICATIONS

Naval Environmental Prediction Research Facility
Monterey, CA 93943-5006

TR 89-01, January 1989: The NEPRF Sunglint Pattern Calculation and Display System -- J. Clark, A Caughey -- 63 pp.

The sunglint intensity model used at NEPRF is described. The model is based on the work of I. Ruff of NOAA-NESS with theory from the work of C. Cox and W. Munk. A detailed derivation of all equations used in the model is given, and graphic depictions are provided. NEPRF's system written on the Hewlett-Packard 9020 with Global Imaging operating system also is presented. Examples of sunglint patterns are shown. The computer code and operating instructions are provided as appendices.

TR 89-02, January 1989: Proceedings, Conference on Microwave Propagation in the Marine Boundary Layer, 21-22 Sep 88 -- L. Hembree and G. Love, eds. -- 357 pp. (Distribution authorized to U.S. Government agencies and their contractors only; see listing on p. 35.)

(Abstract: same distribution as report)

TR 89-03, March 1989: On the Correction of Shipboard Mini-radiosondes of the Western Mediterranean Circulation Experiment - June 1986 -- G. Vogel -- 26 pp.

Atmospheric soundings taken during the Western Mediterranean Circulation Experiment of June 1986 are found to contain inaccuracies due to instrument miscalibrations and ship-induced distortions. Once a criterion is established to identify those soundings in need of surface-layer modification, several corrective techniques are applied to the data. It is found that a profile correction method using surface measurements corrected for ship-induced distortions is best able to provide realistic and representative soundings within the surface layer.

TR 89-04, April 1989: Tests of Various Finite Difference Algorithms Applied to a Simple Water Vapor Transport Problem on a Staggered Grid -- H-C. Kuo -- 28 pp.

The one-dimensional constant advection of a Gaussian function is used to test four positive-definite schemes -- Schemes I, II, Smolarkiwicz, and Arakawa -- and three even-order accurate schemes -- III, IV, and V -- on the C staggered grid. It is shown that for the test problem, Schemes I and II produce identical numerical results. Arakawa's scheme produces the least damping among all the positive-definite schemes, but expensive computations are required with this scheme. The Smolarkiwicz scheme seems to be the most cost effective, although the slightly upstream shifted phase in numerical solution and the determination of the S factor may be drawbacks of this scheme.

Of the even-order accurate schemes, scheme V produces very accurate results. Stability analysis indicates that a reduction in time step size (29% smaller) is required when scheme V is used instead of scheme III. For the test problem, scheme V produces results 10 times more accurate than III and IV with the same number of grid points. Scheme V is more efficient than III because it requires less three times as much computation.

TR 89-05, April 1989: The International TOVS Processing Package: An Evaluation -- C. Sampson -- 24 pp.

Satellite soundings of temperature, pressure and moisture are important sources of data over remote ocean areas where data voids exist and Navy vessels frequently are deployed. This study evaluates the International TOVS (Tiros Operational Vertical Sounder) Processing Package (ITPP) -retrieved temperature and moisture profiles over the eastern United States and Canada during winter 1986, by comparing them with collocated satellite profiles retrieved by a statistical method (Smith and Woolf, 1976). Biases and root mean standard deviations (RMSD) between satellite profiles and collocated radiosonde profiles are determined for both the ITPP and Smith and Woolf methods. Layer mean temperature biases for ITPP data are within 1°K of radiosonde data. Layer mean temperature RMSDs for ITPP profiles are between 1°K and 5°K with a minimum at the 500/400 mb layer of 1.37°K . ITPP layer mean temperatures better approximate radiosonde profiles in the layers between 500 mb and 200 mb than those of the Smith and Woolf scheme. ITPP precipitable water profiles exhibit a moist bias when compared with radiosonde moisture profiles. RMSDs for ITPP precipitable water are between 3 mm and 5 mm. ITPP-retrieved profiles have increased vertical and horizontal moisture resolution when compared with statistically-retrieved profiles.

TR 89-06, August 1989: Field Data Driven Electro-Optical Tactical Decision Aids: A Feasibility Study -- J. Sierchio -- 44 pp. (Distribution authorized to U.S. Government agencies and their contractors only; see listing on p. 35.)

(Abstract: same distribution as report)

TR 89-07, September 1989: Navy Tactical Applications Guide (NTAG), Vol. 8, Part 1; Arctic; Greenland/Norwegian/Barents Seas; Weather Analysis and Forecast Applications -- Forecast Guidance Branch.

Weather satellite case studies of synoptic and mesoscale weather phenomena in the Arctic are described, focusing on operationally important environmental effects. Case studies include analyses of polar low detection and development, marginal ice zone (MIZ) phenomena, and plume detection and analysis. Each study comes to specific conclusions concerning the nature of the phenomenon, and provides suggestions for further applications to analysis and short-range forecasts.

Tr 89-08, September 1989: Forecasters Handbook for Central America and Adjacent Waters -- F. Williams, G. Jung, R. Renard-- 508 pp.

This handbook describes the analysis and forecasting of both atmospheric and oceanic conditions important to air/sea operations over Central America and adjacent waters. Central America is defined herein to include Guatemala, Belize, El Salvador, Honduras, Nicaragua, Costa Rica and Panama. Case studies using satellite imagery are presented for the rainy season, dry season, and hurricane season. Sections also are included on general climatology and coastal geographic influences.

TR 89-09, September 1989: Analysis Uncertainties Determination, Navy Operational Global Atmospheric Prediction System (NOGAPS) -- J. Goerss -- 34 pp. (Distribution authorized to U.S. Government agencies and their contractors only; see listing on p. 36.)

(Abstract: same distribution as report)

CR 89-01, January 1989: System Architecture Study for Environmental Support to Satellite Laser Communications -- H. Nicholson -- 67 pp. (Distribution authorized to the Department of Defense and DoD contractors only; see listing on p. 36.)

(Abstract: same distribution as report)

CR 89-02, March 1989: Application of Special Sensor Microwave/Imager Data for Analysis of Cyclonic Storms in Midlatitudes over the Sea -- K. Katsaros, G. Petty, I. Bhatti, D. Miller -- 40 pp.

In the first contract year of this work we developed algorithms and criteria for identifying fronts in cyclonic weather systems with data on atmospheric water vapor and rain obtained with microwave sensors in space. Using data from the 18, 21 and 37 GHz channels of the Scanning Multichannel Microwave Radiometer (SMMR) on the SEASAT and NIMBUS-7 satellites, we calculated fields of these variables in cyclonic storms.

This report covers work performed in the second year and is concerned with the currently operating microwave radiometer, the Special Sensor Microwave/Imager (SSM/I) on the F8 satellite in the Defense Meteorological Satellite Program (DMSP). This sensor employs three frequencies with similar characteristics as the ones giving atmospheric water data on SMMR, but not at exactly the same frequencies. For this reason we needed to test the algorithms for identifying fronts with data from this new sensor. In addition, the SSM/I has two channels at 85 GHz which are sensitive to scattering caused by large ice particles and graupel in the clouds. We found that an index of this scattering gives unique view of the deep clouds in frontal zones. We also tested cloud liquid water and wind algorithms developed for SSM/I, and found good qualitative agreement with conventional data.

Several cyclones occurring in the fall of 1987 were examined in some detail. It is clear that microwave sensing of these weather systems from space can give the analyst unique and very useful information to better locate fronts, convective regions, and other weather phenomena over the oceans.

CR 89-03, May 1989: Satellite-Derived Moisture-Bogusing Profiles for the North Atlantic Ocean -- L. Eddington -- 34 pp.

A set of 12 vertical profiles of relative humidity for use in satellite bogusing of moisture into numerical weather prediction model initial analysis is presented for the North Atlantic Ocean region. The profiles are based on a satellite image cloud classification scheme applied to a concurrent data set of satellite images and upper-air soundings. Relative humidity profile composites and statistical significance tests are presented for each cloud category. Sources of error in the compositing process are discussed, and possible improvements are suggested.

Both graphical examples and tabulated statistics clearly indicate that regional environmental gridded data may be compacted with either delta-type or double fast Fourier transforms, when the field data approximate values that are continuous in the first derivative. The smoother the original field values are, the more the data can be compacted. Results also show that fields derived from compacted fields can retain required accuracy. The Fourier transforms take twice as long as the delta schemes, but provide better results for light (2:1) compaction. The delta scheme is better than the Fourier transforms for heavy (7:1) compaction. The heavily compacted fields, however, may not be operationally useful.

This study reaches the following conclusions: (1) FFT packing provides better results than delta packing for light (2:1) compaction. (2) Delta packing seems better, with the end result looking more representative, for heavy (7:1) compaction. (3) The need exists to consider operational usefulness (TDA input or C^2 aid) prior to determination of compaction ratio (or to understand the impact of the default option). (4) Products could be built on the other end; instead of two fields and thickness, one field and thickness could be transmitted. (5) No geographic area dependence was found in initial tests. (6) The delta results could be applied immediately for the "Ocean-Met Data Compaction For Transmission" program for SUBLANT; if the transmission takes a hit, the error can be corrected with software, which is not possible with FFT coefficients. (7) Discontinuous fields (precipitation/evaporation duct height) do not compact well with either technique. (8) Sea height is not worth packing for coastal regions without significant preprocessing; there is no problem over water.

CR 89-05 through -10, June 1989: Severe Weather Guide, Mediterranean Ports -- six additional port studies publications in the series to date, as follows:

26. San Remo -- 54 pp (CR 89-05)
27. Genoa -- 60 pp (CR 89-06)
28. Porto Torres -- 62 pp (CR 89-07)
29. Palermo -- 48 pp (CR 89-08)
30. Messina -- 52 pp (CR 89-09)
31. Taormina -- 56 pp (CR 89-10)

Common Abstract:

This handbook for the port of (name of port), one in a series of severe weather guides for Mediterranean ports, provides decision-making guidance for ship captains whose vessels are threatened by actual or forecast strong winds, high seas, restricted visibility or thunderstorms in the port vicinity. Causes and effects of such hazardous conditions are discussed. Precautionary or evasive actions are suggested for various vessel situations. The handbook is organized in four sections for ready reference: general guidance on handbook content and use; a quick-look captain's summary; a more detailed review of general information on environmental conditions; and an appendix that provides oceanographic information.

CR 89-11, April 1989: Investigation of North Atlantic Fog and Development of a Marine Fog Forecast System -- C. Rogers -- 59 pp.

A two-year, two-task research effort to study ocean fog and haze and to provide additional expertise for An Expert-system for Shipboard Obscuration Prediction (AESOP) was carried out. Year 1 (Task I) studied fog occurrence in the North Atlantic and developed an AESOP rule base for these fogs, which was published in a Program Performance Specification (Rogers, 1988). The Year 2 (Task II) effort evaluated forecast errors generated during a test of AESOP, and modified and extended the rule base to correct for these errors. Additionally, fog dissipation and haze formation and dissipation were examined for the N. Atlantic.

Fog is primarily a summertime phenomenon in the N. Atlantic. The well-known Taylor fog forms at midlatitudes (40-50N) in the stable, relatively shallow marine boundary layer which is located at the western end of the semi-permanent anticyclone. In the eastern N. Atlantic extratropical anticyclogenesis occasionally occurs, which can produce stratus lowering fog along its eastern side and Taylor fog in the southerly flow at its western end. At higher latitudes (50-60N) in the track of the transient synoptic systems, much of the fog is advected in from the Taylor-fog formation regions to the south and west. ((continued next page))

Fog dissipation is driven primarily by heating produced by absorption of solar radiation and mixing of warm air from above the inversion which caps the fog layer. These two dissipation processes are abetted by the mixing of the lower humidity of the warm air.

Over the open ocean, the aerosol concentration is generally too low to provide even the minimum concentration required to produce a maximum haze visibility of 5 n mi (9.25 km). Haze visibility levels, without the presence of drizzle or rain, are found over the open ocean mainly in regions of fog formation and dissipation.

CR 89-12, September 1989: Mark III Infrared Operational Tactical Decision Aids for Navy Operations: A Sensitivity Analysis -- R. Shapiro -- 159 pp. (Distribution authorized to U.S. Government agencies and their contractors only; see listing on p. 37.)

(Abstract: same distribution as report)

CR 89-13, October 1989: HALE Aircraft as Sources of Environmental Data Supporting Battle Group Operations: A Feasibility Study -- D. Ross -- 50 pp. (Distribution authorized to U.S. Government agencies and their contractors only; see listing on p. 37.)

(Abstract: same distribution as report)